

To:

Anthony J. Quigley

Attn: John Baczek

From:

Jack Elston

By: Michael Brand (1)

Subject:

Pavement Design Approval

Date:

June 15, 2018

Route: Wolf Road

Job No.:

D-91-280-12

Section: 3941-R

Contract No.: 60T05

County: Cook

Limits: IL 21 to North of Hintz Road

Target Letting: 06CY19

We have reviewed the updated pavement design for the above referenced project which was submitted on June 5, 2018. The design was originally approved on July 9, 2014 but needed to be updated as it would expire prior to the anticipated letting date.

The scope of the project is to reconstruct Wolf Road to provide a three-lane cross section and then transfer jurisdiction of the roadway to the village of Wheeling. IL 68 (Dundee Road) and Highland Avenue will also be widened at Wolf Road to accommodate the improvements at the intersection.

Reconstruction of Wolf Road - Due to the jurisdictional transfer to the village and their request for concrete pavement, we concur with the District this is a "special design" and no economic analysis is required.

Widening of IL 68 (Dundee Road) and Highland Avenue - These two designs were analyzed on a first cost basis. Both resulted in the mechanistic design being the least expensive.

In summary, the approved pavement designs are as follows:

Wolf Road

8" PCC with Curb & Gutter

IL 68 (Dundee Road) 9.75" Full-Depth HMA

12" Agg Subgrade Improvement

12" Agg Subgrade Improvement

Highland Avenue 7" Full-Depth HMA 12" Agg Subgrade Improvement

If you have any questions, please contact Mike Brand at (217) 782-7651.

To:

Jack Elston

Attn: Michael Brand

From: Jose A. Dominguez

By: M. Mangoba/O. Patel

Subject: Pavement Analysis*

Date: June 5, 2018

*Route: Wolf Road

Limits: IL 21 to n/o Hintz Road

Section: 3941-R County: Cook Contract No.: 60T05

Job No.: D-91-280-12 Current target: 06CY19

We have completed the pavement analysis for the above captioned location. Review by the Central Office is required since the total pavement area for reconstruction and widening exceeds 4,750 Square Yards. The following is the scope of the project:

Wolf Road - Reconstruction to provide a 3 lane cross-section.

IL 68 (Dundee Road) @ Wolf Road – Widening to provide an eastbound right turn lane.

Highland Avenue @ Wolf Road – Widening at the intersection to accommodate the geometric improvements near the radius returns.

A 20-year pavement analysis was performed on above segments. Wolf Road is considered a special design as its' jurisdiction will be transferred to Village of Wheeling pending PCC pavement reconstruction. For IL 68 and Highland Avenue, our recommendations are based on the mechanistic pavement design procedure using a first cost analysis. The recommended pavement is:

Wolf Road

Reconstruction
PCC Curb and Gutter (Tied)
8" PCC Pavement (Jointed)¹
12" Aggregate Subgrade Improvement⁵

IL 68 (Dundee Road)

Widening
9 ¾" Full Depth HMA⁶
2" HMA Surface Course, Mix "D", N70²
7 ¾" HMA Binder Course, IL-19.0, N70³
12" Aggregate Subgrade Improvement⁵

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Highland Avenue⁷

Widening and Resurfacing
7" Full Depth HMA⁶
2" HMA Surface Course, Mix "D", N70²
5" HMA Binder Course, IL-19.0, N70⁴
12" Aggregate Subgrade Improvement⁵

<u>¹Designer Note 1:</u> Use pay item **42000301, PORTLAND CEMENT CONCRETE PAVEMENT 8" (JOINTED),** paid for in square yards.

² <u>Designer Note 2:</u> Use pay item 40603340, HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70 paid for in tons.

³Designer Note 3: For widening of six feet or less use pay item 35600707, HOT-MIX ASPHALT BASE COURSE WIDENING, 7 ¾", paid for in square yards. For widening of greater than six feet use pay item 35501315, HOT-MIX ASPHALT BASE COURSE, 7 ¾", paid for in square yards.

*Designer Note 4: For widening of six feet or less use pay item #1009860, HOT-MIX ASPHALT BASE COURSE WIDENING, 5", paid for in square yards. For widening of greater than six feet use pay item 35501304, HOT-MIX ASPHALT BASE COURSE, 5", paid for in square yards.

5Designer Note 5: Use pay item 30300112, "AGGREGATE SUBGRADE IMPROVEMENT, 12" paid for in square yards.

<u>Spesigner Note 6:</u> Refer to the District One, Bureau of Materials' "Hot-Mix Asphalt – Mix Selection" tables to determine the corresponding HMA mix table requirements for the plans.

⁷<u>Designer Note 7</u>: Highland Avenue is subject to local jurisdictional approval and concurrence.

If you have any questions or need additional information, please contact Ojas Patel, Pavement Engineer, at (847) 705-4550.

Jose A. Dominguez, P.E

Project Support Engineer

First Cost Analysis of Widening Project

Date: 6/15/2018 Route Highland Ave.

Quantities by: ONP Checked by: Section 3941-R

Unit prices by: MA Checked by: County Cook
Net Length Project Wolf Road (IL 21 to Hintz Rd)

Contract 60T05

	Mechanistic Flexible							
Area (Sq. Yd.)	Height (inches)	Weight (Tons)	Material		Unit Cost	Total	ITEM#	
		0	HMA Surface Course, MIX "D" N50	@		\$0.00	40603335	
200	2	22	HMA Surface Course, MIX "D" N70	@	\$145	\$3,248.00	40603340	
		0	Poly HMA Surface Course, MIX "F" N90	@		\$0.00	40603595	
		0	Poly HMA Surface Course, SMA N80	@		\$0.00	40603153	
		0	HMA Binder course, IL-19, N50	@		\$0.00	40603080	
200	5	56	HMA Binder course, IL-19, N70	@	\$76	\$4,256.00	40603085	
		0	HMA Binder course, IL-19, N90	@		\$0.00	40603090	
		0	Poly HMA Binder course, IL-19, N90	@		\$0.00	40603240	
		0	HMA Binder course, SMA, N80	@		\$0.00	40603148	
	NA	NA	12" Aggregate Subgrade	@		\$0.00	30300112	
	Total					\$7,504.00		

Modified AASHTO								
Area (Sq. Yd.)	Height (inches)	Weight (Tons)	Material		Unit Cost	Total	ITEM#	
		0	HMA Surface Course, MIX "D" N50	@		\$0.00	40603335	
200	2	22	HMA Surface Course, MIX "D" N70	@	\$145	\$3,248.00	40603340	
		0	Poly HMA Surface Course, MIX "F" N90	@		\$0.00	40603595	
		0	Poly HMA Surface Course, SMA N80	@		\$0.00	40603153	
		0	HMA Binder course, IL-19, N50	@		\$0.00	40603080	
200	6.5	73	HMA Binder course, IL-19, N70	@	\$76	\$5,532.80	40603085	
		0	HMA Binder course, IL-19, N90	@		\$0.00	40603090	
		0	Poly HMA Binder course, IL-19, N90	@		\$0.00	40603240	
		0	HMA Binder course, SMA, N80	@		\$0.00	40603148	
	NA	NA	12" Aggregate Subgrade	@		\$0.00	30300112	
	Total					\$8,780.80		

	Composite							
Area (Sq. Yd.)	Height (inches)	Weight (Tons)	Material		Unit Cost	Total	ITEM #	
		0	HMA Surface Course, MIX "D" N50	@		\$0.00	40603335	
200	2	22	HMA Surface Course, MIX "D" N70	@	\$145	\$3,248.00	40603340	
		0	Poly HMA Surface Course, MIX "F" N90	@		\$0.00	40603595	
		0	Poly HMA Surface Course, SMA N80	@		\$0.00	40603153	
200	5	NA	PCC Base Course	@	\$60	\$12,000.00	35300410	
	NA	NA	12" Aggregate Subgrade	@		\$0.00	30300112	
Total					\$15,248.00			

First Cost Analysis of Widening Project

Date: 6/5/2018

Quantities by: ONP CI

Quantities by:ONPChecked by:Section3941-RUnit prices by:MAChecked by:CountyCook

Net Length Project Wolf Road (IL 21 to Hintz Rd)

Contract 60T05

Route

IL 68

	Mechanistic Flexible							
Area (Sq. Yd.)	Height (inches)	Weight (Tons)	Material		Unit Cost	Total	ITEM#	
		0	HMA Surface Course, MIX "D" N50	@	•	\$0.00	40603335	
611	2	68	HMA Surface Course, MIX "D" N70	@	\$145	\$9,922.64	40603340	
		0	Poly HMA Surface Course, MIX "F" N90	@		\$0.00	40603595	
		0	Poly HMA Surface Course, SMA N80	@		\$0.00	40603153	
		0	HMA Binder course, IL-19, N50	@		\$0.00	40603080	
611	7.75	265	HMA Binder course, IL-19, N70	@	\$76	\$20,153.22	40603085	
		0	HMA Binder course, IL-19, N90	@		\$0.00	40603090	
		0	Poly HMA Binder course, IL-19, N90	@		\$0.00	40603240	
		0	HMA Binder course, SMA, N80	@		\$0.00	40603148	
	NA	NA	12" Aggregate Subgrade	@		\$0.00	30300112	
	_		Total			\$30,075.86		

Modified AASHTO								
Area (Sq. Yd.)	Height (inches)	Weight (Tons)	Material		Unit Cost	Total	ITEM#	
		0	HMA Surface Course, MIX "D" N50	@	•	\$0.00	40603335	
611	2	68	HMA Surface Course, MIX "D" N70	@	\$145	\$9,922.64	40603340	
		0	Poly HMA Surface Course, MIX "F" N90	@		\$0.00	40603595	
		0	Poly HMA Surface Course, SMA N80	@		\$0.00	40603153	
		0	HMA Binder course, IL-19, N50	@		\$0.00	40603080	
611	11	376	HMA Binder course, IL-19, N70	@	\$76	\$28,604.58	40603085	
		0	HMA Binder course, IL-19, N90	@		\$0.00	40603090	
		0	Poly HMA Binder course, IL-19, N90	@		\$0.00	40603240	
		0	HMA Binder course, SMA, N80	@		\$0.00	40603148	
	NA	NA	12" Aggregate Subgrade	@		\$0.00	30300112	
Total					\$38,527.22			

Composite								
Area (Sq. Yd.)	Height (inches)	Weight (Tons)	Material		Unit Cost	Total	ITEM#	
		0	HMA Surface Course, MIX "D" N50	@		\$0.00	40603335	
611	2	68	HMA Surface Course, MIX "D" N70	@	\$145	\$9,922.64	40603340	
		0	Poly HMA Surface Course, MIX "F" N90	@		\$0.00	40603595	
		0	Poly HMA Surface Course, SMA N80	@		\$0.00	40603153	
611	10	NA	PCC Base Course	@	\$68	\$41,548.00	35300410	
	NA	NA	12" Aggregate Subgrade	@		\$0.00	30300112	
Total					\$51,470.64			